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An Examination of the Effectiveness of a Community Implementation of the Program for the Education and Enrichment of Relational Skills (PEERS) for Teenagers with Autism

by

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Abstract

The Program for the Education and Enrichment of Relational Skills (PEERS) is a parent-assisted social skills intervention for teens with autism spectrum disorder (ASD). The purpose of this study was to examine whether the PEERS program can be effectively implemented with fidelity in a community setting and achieve positive results for teenagers. Seven teens and their parents participated in the study. Results revealed that overall teens made significant improvement with their social skills that were similar to the findings of the program developers (Laugeson et al., 2009). Social anxiety and autistic symptomatology decreased and durability of treatment was upheld at three month follow-up. According to instructor records of program delivery and evaluations of program instructional quality, the PEERS program was implemented as intended with high quality instruction. These findings support and extend recent research on the positive impacts of the PEERS program and provide evidence of effectiveness in community settings.

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An Examination of the Effectiveness of a Community Implementation of the Program for the Education and Enrichment of Relational Skills (PEERS) for Teenagers with Autism

Past research reveals that children diagnosed with Asperger's syndrome (AS) or high functioning autism (HFA) have marked impairments in social functioning. These children initiate and reciprocate peer interactions less often than language-matched peers with developmental disabilities (Frankel et al., 2010; Hauck, Fein, Waterhouse, & Feinstein, 1995; Sigman & Ruskin, 1999) and demonstrate difficulty in forming peer relationships, particularly friendships (American Psychiatric Association, 1994). Friendship is of particular importance for children with autism spectrum disorders (ASD) because these relationships can provide "supports," "links" and "connections" to the larger social world (Chamberlain, Kasari, & Rotheram-Fuller, 2007) and they also have the potential to enhance development (e.g. increase behavioral standards, provide support, provide appropriate model for social behavior, aid in the generalization of new skills). Recently, interventions have been developed to enhance friendships in children and teens with ASD (e.g., Program for the Education and Enrichment of Relational Skills (PEERS); Laugeson & Frankel, 2010) but their effectiveness in community settings has not been established.

The Importance of Friendships

Peers can have a significant and enduring influence with regards to one's socialization and development (Ladd, 2005). There are many developmental benefits associated with developing peer relations for all children/adolescents.

Ladd (2005) pointed out that the peer group is a place where an adolescent can experiment with behaviors such as assertiveness, aggression, romantic feelings and conflict management. It also provides peers with opportunities to experiment with social roles, expand their thought processes and knowledge base, and discuss their feelings and receive emotional support (Ladd, 2005). However, the absence of friendships has the potential to create difficult and painful situations consisting of rejection and isolation (Chamberlain et al., 2007), which can increase one's susceptibility to depression (American Psychiatric Association, 1994). Past research has found that for all children/adolescents, peer difficulties have been related to various problems such as: underachievement; truancy, school expulsion, externalizing and internalizing behaviors, as well as psychiatric illness (Ladd, 2005).

Friendship Challenges for Children with ASD

Feelings of loneliness and isolation have been examined with children with Autism Spectrum Disorder (ASD), primarily children diagnosed with HFA or AS (Bauminger & Kasari, 2000; Chamberlain et al., 2007). Mixed results have been discussed in the literature with some children with ASD reporting greater loneliness than peers (Bauminger & Kasari, 2000) while others reporting no greater sense of loneliness (Chamberlain et al., 2007). Feelings of loneliness may indicate children's longing to participate in friendships with peers however, Bauminger and Kasari (2000) also reported that children with ASD have a lower understanding of the relationship between friendship and loneliness than typically developing children.

Research carried out by Kasari, Locke, Gulsrud, and Rotherham-Fuller (2011) which examined social networks and friendships at school of children with and without ASD, have concluded that children with ASD in inclusive classrooms are most often found to be on the periphery of social networks within their classrooms. Not only are they found to be on the periphery, but their networks tend to be smaller, their friendships tend to be viewed as unilateral as opposed to reciprocal, and the quality of friendship is poorer than their typically developing classmates (Kasari et al., 2011).

Program for the Education and Enrichment of Relational Skills (PEERS)

Past research suggests that simply being placed together with typically developing children without additional treatment does not lead to an increase in social interaction for children with autism (Frankel et al., 2010; McConnell, 2002). It appears that in order for these children to acquire the skills that are necessary to understand, make, and keep friends, they need intervention that addresses social skill development. Few social skills training programs have been devoted to the improvement in social functioning for teenagers functioning at the higher end of the autism spectrum (Frankel et al., 2010). However, the Program for the Education and Enrichment of Relational Skills (PEERS) was published in a manualized form (Laugeson & Frankel, 2010) and has received considerable attention due to research reports that support its efficacy in enhancing social skill development for teenagers with autism (Frankel et al., 2010; Laugeson, Frankel, Mogil, & Dillon, 2009).

The lesson format and many of the rules regarding social etiquette in the PEERS were adapted from an evidence-based parent-assisted social skills training program known as the Children's Friendship Training (CFT; Frankel & Myatt, 2003). The effectiveness of CFT has been demonstrated for children with Fetal Alcohol Spectrum Disorders (FASD), Attention Deficit Hyperactivity Disorders (ADHD), and for children with Autism Spectrum Disorders (ASD) (Frankel, Myatt, & Cantwell, 1995; Frankel, Myatt, Cantwell, & Feinberg, 1997; Frankel, Myatt, & Feinberg, 2007; O'Connor et al., 2006). Results of these studies revealed that the social skills generalized outside of the treatment situation and were maintained for three months after ending treatment.

The PEERS intervention adapted the methods and curriculum of the CFT to better accommodate instruction and content that were relevant to teenagers with ASD (Laugeson et al., 2009). The three key features of the intervention were: (1) Instruction was conducted in a safe, small group format, which included brief didactic instruction, modeling, role playing, coaching with performance feedback, behavioral rehearsal, and weekly socialization assignments including a homework review; (2) parents were included in the program within separate concurrent sessions. As pointed out by Frankel and Myatt (2003), parents can have significant effects on their children's friendships and can support the development of a peer group when provided with direct instruction and supervision; (3) the content of the PEERS intervention focused on teaching rules of social etiquette to teenagers, while their parents were given instructions regarding the supervision and implementation of their child's newly learned skills (Laugeson et al., 2009).

In 2009, Laugeson et al. evaluated the efficacy of the PEERS program for teenagers diagnosed with AS, HFA or Pervasive Developmental Disorder Not otherwise Specified (PDD-NOS). The study included thirty-three teenagers between the ages of 13-17 years of age, along with their parents. The teenagers were randomly assigned to either a Treatment Group (TG) or a Delayed Treatment Control Group (DTCG). The PEERS intervention consisted of twelve 90 minute sessions that were delivered once a week for 12 weeks. The participants in the TG completed outcome measures just prior to receiving the intervention (week 1) and on the last night of the intervention (week 12), while the DTCG participants completed outcome measures at the onset of the study (week 1), just prior to beginning the intervention (week 12) and on the last evening of the intervention (week 24). Pre and post-assessments were compared at week 1 and week 12 for the TG and DTCG. The results of the study revealed that teenagers in the TG had improved their knowledge of rules of social etiquette relevant to making and keeping friends. There was a significant increase in the amount of hosted get-togethers and improved quality of friendships at the end of treatment, in comparison to the DTCG who had not yet started treatment. Additionally, the parents of the teenagers in the TG reported significant improved social skills functioning overall in comparison to parents of teenagers in the DTCG.

Since the Laugeson et al. (2009) study, three additional studies have been carried out with the PEERS program. Three studies (unpublished at the time of the present examination) were presented at the International Meeting for Autism

Research (IMFAR) on May 18th, 2012 in Toronto. The first study currently carried out by Roman, Park, Sanderson, and Laugeson involves testing the efficacy of a program used to teach social skills to preschool children three to six years of age, with high-functioning autism. This study is using core principals of the PEERS program in conjunction with another program referred to as PALS (Preschool Applied Learning of Social Skills). Preliminary results suggest significant improvements in parent-reported outcome measures as per social functioning of the preschoolers.

The second study by Vreeland, Laugeson, Romeyn, Tucci, and Ellingsen (2012) involved examining the effectiveness of the PEERS program with high-functioning adolescents with ASD. This study differed from the Laugeson et al. (2009) study, in two ways. First, the treatment was carried out in a residential treatment setting and second, instead of having parents involved in the program, residential therapists adopted the role as facilitators and coaches. The researchers expected improvement in social skills for the adolescents, as measured by adolescent reported outcome measures, as well as therapist reported outcome measures.

Finally, a third study carried out by Hall and Kraemer (2012) involved testing the effectiveness of the PEERS program in a school setting. This study involved eight adolescents (five with ASD and two with Intellectual Disability; ID), where the teachers were the facilitators of the program, and paraprofessionals also worked with the group. Results indicated an improvement on all outcome

measures as reported by adolescents, their teachers and their parents. Thus, demonstrating increased knowledge of social skills by adolescents with ASD.

The Importance of Effectiveness Trials

Taken together, existing research provides good emerging evidence for the effect of the PEERS program. Autism interventionists and service provider organizations are eager to implement interventions that have an "evidence-base." However, many programs, including the PEERS program, with strong empirical support have been evaluated by researchers under controlled conditions. More rare in the literature are programs implemented on a routine, ongoing basis in 'real world conditions' (Wilson, Lipsey, & Derzon, 2003). Whereas *efficacy trials* require a rigorous research design, a high quality of program implementation, and research control over confounding factors, *effectiveness trials* focus on examining the effect of a program when implemented under naturalistic conditions by someone other than the developer. In effectiveness trials program fidelity may vary and the competing demands on interventionists may contribute to variation in the expected outcomes (Flay et al., 2005). For the PEERS program to achieve widespread dissemination (i.e., in school, clinics, homes, family centers) and successful implementation under broader, less controlled, and more complicated real world conditions, the importance of effectiveness studies cannot be under estimated.

Current Study

Before this program becomes widely adopted, it is important to examine and replicate its effectiveness in naturalistic settings. The purpose of the current

research is to evaluate the effectiveness of the PEERS program for teenagers with HFA or AS in a community setting.

The intention of the current study is to examine whether

1. The PEERS program can be effectively implemented in a community setting
    a) *with fidelity*
    b) *with high quality instruction*
2. An implementation of the PEERS program can achieve comparable outcomes similar to Laugeson et al. (2009); and
3. If treatment gains are made, will they be maintained at a three-month follow-up period.

With appropriate clinician training in the PEERS program and careful monitoring of integrity of implementation of the program, it was hypothesized that positive outcomes similar to those found in Laugeson et al. (2009) for teenagers with HFA and AS will be achieved.

Significance of the Study

The current study has relevance to teenagers with HFA and AS and their families as it examines the effectiveness of the PEERS program in 'real world conditions' and the findings may inform parents, clinicians, and teachers about whether this approach to supporting social skills that are important to foster healthy peer relationships is effective in a community setting. The PEERS program is intended to positively impact the lives of those teenagers that would like to develop the social skills needed to foster healthy peer relationships and

provide preparation for those teenagers that would like to enter the workforce, but may be lacking the social skills that are necessary for a particular job/career they may be striving towards. It is anticipated that an examination of the PEERS intervention will have a positive impact on direct services that are provided to teenagers with autism in local contexts. Furthermore, if this study can achieve positive results similar to Laugeson et al. (2009), when implemented by personnel who were not involved in the program development, then this may be a program that demonstrates effectiveness in a community setting.

Ethics

One ethical concern related to the study was informed consent. An informed consent form was developed that included all the parameters of the proposed study and included all elements outlined in Creswell (2009). In accordance with obtaining written consent from the parents, written assent was also obtained from the teenagers themselves. The principal researcher realized that the study involved recruitment of a vulnerable population and actively took steps to inform the teenage participants about what the purpose of the study was, what was expected of them if they chose to participate, in addition to other relevant information as per the consent form. They were also informed that they could withdraw their assent at any point during the study.

It was anticipated that a portion of the participants that were recruited for the study may have been encouraged to participate at the request of their parents, and may not necessarily have wanted to participate. While the principal researcher wanted to respect the requests of the parents to have their teenager participate in

the study, respecting the requests of the teenagers was first and foremost the bigger concern. This meant that if the teenager verbally declared that they did not want to participate in the study then they were withdrawn as requested. If the principal researcher was to only respect the parents request and not the teenagers, not only would the rights of the individual (in this case the teenager) be violated, consequently the teenager may have affected the results of the study based on their lack of participation during the sessions. Also, another consequence was that they may have affected the experiences of the other teenagers who were participating in the same sessions. It was discovered throughout the course of the study that all the participants wanted to attend the PEERS program, and at no time did they wish to withdraw their assent. As an incentive, snacks and beverages were provided each week during the sessions, in an attempt to increase persistence of participation throughout the study.

Method

Procedure

Recruitment and eligibility. Flyers for the PEERS intervention were posted at The Centre for Autism Services of Alberta, The Autism Society of Edmonton Area, as well as the Glenrose Rehabilitation Hospital. Additionally, the Centre for Autism Services Alberta sent out flyers to families who accessed services at the Centre in the past. A phone screening was carried out with interested participants in order to see if they were eligible to participate. Once they were deemed as eligible to participate, an interview was scheduled in order to administer pre-screening measures to see if the participants met all the required

criteria to fully participate in the study. In accordance with the participant recruitment procedures employed by Laugeson et al. (2009), eligible participants included those who have: (a) a diagnosis of HFA, AS, or PDD-NOS; (b) a chronological age between 12-17 years; (c) social problems as reported by parent(s); (d) English language fluency; (e) a verbal IQ of 70 or above on the K-BIT-2; (f) absence of history of major mental illness such as bipolar disorder, schizophrenia, or psychosis; (g) absence of hearing, visual, or physical impairments which would preclude teens from participating in sports activities; and (h) a parent or family member who is a fluent English speaker and is willing to participate in the program and study.

Participant selection. Twenty-three teenagers and their parents were initially interested in the study and left their information for a phone screening. Some of the parents requested additional information regarding the study. Upon contacting the parents to carry out a phone screening, 13 teens and their parents were still interested and/or eligible for the pre-screening interview. Interviews were carried out over four days. One family decided to opt out of the interview which left 12 teenagers and their parents to attend interviews. Of those 12, ten teenagers met the required criteria to participate in the study. The other two participants did not meet the verbal IQ cutoff score of 70 on the Kaufman brief intelligence test-second edition (K-BIT-2). Before the start of the study, three families decided to opt out of the study due to a busy schedule and other time commitments. Seven teenagers between 12 and 17 years of age participated and completed this study, along with their parents.

All participants had been given previous diagnoses by qualified professionals. These diagnoses included Asperger's (n = 2), High-functioning Autism (n = 3), or PDD-NOS (n = 2). Although it would have been preferable to carryout diagnostic assessment using the Autism Diagnostic Observation Schedule (ADOS) beforehand, this was not a feasible option in this community setting. Therefore, in lieu of standardized diagnostic assessment, the Autism Quotient (AQ; Baron-Cohen et al. 2006) was used, along with the Social Responsiveness Scale (SRS; Constantino, & Gruber 2005).

It was expected that there would be a higher proportion of males to females as autism spectrum disorders are more common in males than females, with a ratio of approximately 4:1 (Boucher, 2009). This was indeed the case, with five of the seven participants being males. It was also suspected that the participants would represent various socioeconomic statuses and various ethnic backgrounds as there is insufficient evidence that autism discriminates based on ethnic or social class differences (Boucher, 2009). However, the majority of the participants identified themselves as Caucasian (n = 6) and one participant identified as mixed ethnicity. It is suspected that a larger sample size would have yielded a more diverse population.

Four of the seven participants were enrolled in a regular school setting, with two of those participants having a part-time aide. Two participants were enrolled in a modified program and one participant was home-schooled. Three of the seven participants were prescribed, and actively consuming, psychoactive medications during the study. The prescription of these medications were not

congruent with the commencement of the study (i.e., all meds were prescribed by psychiatrists beforehand). One participant was prescribed Adderall, the second participant was prescribed Risperidone, and the third participant was prescribed Clomipramine, Ritalin, and Risperidone.

Treatment. The PEERS intervention consisted of 90-min sessions, delivered once a week over the course of 14 weeks. The sessions were carried out at the Centre for Autism Services Alberta which is located in Edmonton, Alberta. Parents and teenagers attended separate, concurrent sessions that instructed them on key elements about making and keeping friends. The program was implemented by the principal researcher who obtained the required skills necessary to carry out the intervention, by receiving training in the PEERS program at UCLA before commencement of the study. The UCLA training was carried out over four days and was conducted by one of the developers of the program, Liz Laugeson.

The principal researcher was the group leader for the teen group sessions. A clinical psychologist (who was employed at the Centre for Autism Services Alberta) was enlisted to take on the role of group leader for the parent sessions. This clinical psychologist did not have training in the PEERS program, but did receive informal training from the researcher, as per the information that was to be relayed during the parent sessions, and reviewed the PEERS manual.

In addition to the group leaders, three research assistants were also enlisted in the study and acted as “coaches.” Two coaches were utilized in the teenager group sessions, in order to monitor adherence to the treatment protocol

as carried out by the group leader. These coaches also assisted in handling any participant misbehavior in the group and additionally, were involved in role-play demonstrations, when needed. According to Laugeson and Frankel (2010), undergraduate psychology students with background courses in developmental/child psychology courses and who are familiar with working with teenagers are typically adequate for this position. In the teen sessions, one coach was a first-year Ph.D. student in Educational Psychology and the other was a Speech-Language Pathologist employed at the Centre for Autism Services Alberta. In the parent sessions, a coach assisted to monitor adherence to the treatment protocol carried out by the parent group leader. This coach was a first-year Master's student in Educational Psychology. The three coaches were informally trained on the PEERS program by the principal researcher carrying out the study.

As outlined in Frankel and Myatt (2003), the PEERS program addresses five areas of social functioning among teenagers: (a) reciprocity in conversations with the purpose of developing meaningful relationships; (b) promoting skills with the help of parents in order to expand the teenager's social network and to diminish the importance of the rejecting peer group (if one is present); (c) diminishing the effects of a negative reputation, that the teenager may have within a current peer group, by teaching the rules of peer etiquette; (d) instructing teenagers and parents concerning the promotion of more successful get-togethers with the teenager's peers; and (e) improving the teenager's competence at

handling bullying, teasing, and other conflicts in order to avoid continuing provocation from peers.

Concurrent teenager and parent sessions followed a similar structure in meeting. Each session started with a review of the homework that was assigned the previous week (Laugeson et al., 2009). Sufficient time was allotted to address any concerns that parents or teens had regarding homework problems. After addressing the homework review, the session continued with a didactic lesson, which was outlined in a handout that was given to the parents, in their group session. Parents were instructed on ways that they could help their teens to overcome any obstacles regarding their weekly socialization homework assignments. Teenager didactic lessons were followed with demonstrations where the group leader and one-to-two coaches modeled the appropriate social skills that were being taught, through role-play exercises. These social skills were then rehearsed by the teenagers during the session, where they were given performance feedback from the group leader and the coaches. Towards the end of the session, homework was assigned for the following week, with sufficient time being allowed to discuss potential barriers to the completion of the homework.

The sessions concluded with the parents and teenagers reuniting in the parent session's room. During this time, the teenagers briefly reviewed the didactic lesson with their parents and then homework assignments were discussed. In order to minimize potential parent-teenager conflicts during the completion of the homework, the level of parental involvement was individually negotiated at

the end of the session with the help of the group leaders, as necessary. Multiple homework assignments were given out on a weekly basis.

As discussed in Laugeson et al. (2009) the session content of the PEERS program has been adopted from the Frankel and Myatt (2003) framework with some modifications in order to adapt the program for use with teenagers with autism. The following is a brief outline of what is covered in each of the 14 sessions with the teenage group: (1) Introductions and trading of information with peers in order to find common interests; (2) conversational skills; (3) electronic communication; (4) choosing appropriate friends; (5) appropriate use of humour; (6) peer entry strategies; (7) peer exit strategies; (8) planning and having successful get-togethers; (9) good sportsmanship during games and sports; (10) handling teasing and embarrassing feedback; (11) handling bullying and bad reputations; (12) handling disagreements with peers; (13) handling rumours and gossip; and (14) the graduation party and ceremony (please refer to Appendix A for a brief overview of the PEERS sessions).

The principal researcher documented the discussions as to how the groups would proceed with the other group leader and coaches (informal training), in addition to weekly implementation of the program in a research diary. Serious concerns and/or issues that arose, including behavioral disruptions of teenagers, were also documented in the diary. For example, there was a brother-sister duo (with the brother being older by three years). The principal researcher was concerned about this pre-existing relationship and the impact that it might have on the dynamics of the group. Proactive steps were taken to minimize potential

impacts by arranging a seating plan each session. The sibling duo never sat beside each other and during role plays or group activities, the siblings were not matched up. However, during one of the homework assignments where teens had to make an in-group phone call to practice the skills they were learning, one of the siblings had to call the other. This was simply due to the high volume of homework assignments involving in-group phone calls, and the need for rotation of calls. The parents of the siblings easily completed the in-group phone call without any issues, and the teens also reported successful completion of the homework without any issues arising.

During all of the sessions, the participants were observed getting along very well. The two females tended to gravitate towards one another and friendship quickly ensued. At the first session, most of the teens seemed quite nervous, but seemed to 'warm-up' as the session progressed. One teen was concerned about the presence of the video recording equipment in the room and did not want his face showed on the camera. The principal researcher tried to minimize his fears by informing him that he would not be on camera as long as he did not turn around. This answer seemed to appease him. It should also be noted that consent, as well as assent from parents and teens was obtained with regards to the sessions being recorded. Overall, the teens were easy to engage, and ready and willing to participate during each session.

The parent group was comprised of eight parents (one couple). Over the course of the 14 sessions two parents could not attend all the sessions. One parent had their spouse attend three of the fourteen sessions and another parent had their

spouse attend four of the fourteen sessions. All parents were informed that if they needed their spouses to substitute for them, they would have to bring them up to speed with what the homework was, and the information that they would need to share during the group meeting. All parents seemed to get along well and openly share information about how their child was progressing, as well as share any concerns or challenges that they were experiencing (as it related to the PEERS program). With regards to attendance, three of the participants attended 100% of the sessions. The other four participants missed one session each. Reasons contributing to absenteeism included: responsibility to job (for teen), sickness, both parents busy with work and not being able to attend the session, and family obligations.

Administration of outcome measures. Teenagers and their parents completed outcome measures just prior to receiving the intervention (week 1) and the last night of the intervention (week 14). Pre- and post-assessments were compared at week 1 and week 14. The parent who participated in the PEERS session on a regular basis was the parent who completed all of the outcome measures. Additional follow-up assessments were conducted three months following the conclusion of the PEERS sessions. This was done in order to measure gains made due to the PEERS intervention and thus, test the durability of the intervention. Teenagers and parents completed the post-assessment measures on the last day of sessions (week 14), in the presence of the research team. However, pre-assessment outcome measures as well as follow-up outcome

measures were sent in the mail to the families, with a list of instructions for completing the outcome measures.

Measures

The descriptive and outcome measures utilized were similar to those used by Laugeson et al. (2009) in their efficacy study, in order to contrast the findings of the present effectiveness evaluation of the PEERS program. Additional measures were also included, those being: the Social Responsiveness Scale (SRS); the Autism-Spectrum Quotient (AQ); and the Social Anxiety Scale (SAS).

Descriptive measures.

At the beginning of treatment, all participants were asked to complete a questionnaire to document all concurrent interventions (including pharmaceutical) to ensure that program effects were only attributable to the PEERS intervention. Although three of the seven participants were actively taking psychoactive medications before the study started, none of the participants were enrolled in other interventions during the study.

***Socioeconomic status*.** While a direct measure of parent socioeconomic status (SES) was never obtained, information on the career(s)/job(s) of parents was obtained. Therefore, SES was calculated using the procedure described by Blishen (1967).

Kaufman brief intelligence test-second edition (K-BIT-2; Kaufman & Kaufman, 2005). The K-BIT-2 was used to assess verbal intellectual functioning of the teenager and took approximately 25 minutes to administer. As pointed out by Laugeson et al. (2009), the K-BIT-2 is comparable to the Wechsler

Intelligence Scale for Children-fourth edition (WISC-IV) in terms of validity and reliability. For the purpose of this study, the K-BIT-2 was favored over the WISC-IV as it was easy to administer, and was more time efficient to administer in a community setting.

Vineland adaptive behavior scales-second edition, survey form (Vineland-ll; Sparrow, Balla & Cicchetti, 2005). The Vineland-II was used to assess the teenager's adaptive behavior skills that are needed for everyday living. It provides an assessment of functioning of communication, socialization, and an adaptive behavior composite and took approximately 30 minutes to complete. This measure was given to the parents in the form of a questionnaire. Parents were asked to rate the degree to which their teenager exhibits each behavior item as either "never," "sometimes/partially," or "usually." Higher scores on this test represent better adaptive functioning. As pointed out by Laugeson et al. (2009), content validity has been established for all domains of the Vineland-II.

Autism-spectrum quotient (AQ; Baron-Cohen, Hoekstra, Knickmeyer & Wheelwright, 2006). The AQ was administered to parents and is a questionnaire that is used as a screening tool to assess autistic-like traits in an individual. It is comprised of 50 questions that assess five areas: social skill; attention switching; attention to detail; communication; and imagination. Parents rated the items as "definitely agree," "slightly agree," "slightly disagree," or "definitely disagree." A score of 32 or more is said to be indicative of clinically significant levels of autistic traits. All parents with the exception of two indicated clinically significant

levels of autistic traits. One teen's score was borderline, with a score of 31 and the other teen's score was an outlier, scoring 7 (this case is discussed further below).

Outcome measures.

Social responsiveness scale (SRS; Constantino & Gruber, 2005). The SRS is a parent questionnaire containing 65 items and measures various behaviors such as, interpersonal behavior, communication, and repetitive/stereotypical behaviors that are features of ASD. The SRS can be used to screen individuals suspected of being on the spectrum, as well as to aid in diagnosis. This screening measure can be used to identify: autistic disorder, Asperger's disorder, and PDD-NOS. Compared to other screening/diagnostic tools that are designed to identify the presence or absence of a disorder (an "either/or" decision), the SRS better reflects the characteristics of the disorder, as they are represented on a spectrum. More precisely, the SRS measures symptomatology with scores falling in three different ranges (normal, mild-moderate, or severe). A higher score on this scale is strongly associated with a clinical diagnosis of ASD. Although this measure is commonly used as a descriptive measure, the principal researcher made the decision to use this questionnaire as a descriptive and outcome measure. The researcher was curious as to whether or not parents would perceive a decrease in their teen's ASD symptomatology, with the introduction of the PEERS program. Therefore, this measure was administered to parents at pre- and post- treatment, and follow-up. The SRS demonstrated internal consistency at pre- and post-treatment and follow-up. Specifically, Cronbach alphas were .97 at pretest, .98 at post-test, and .96 at follow-up. These alphas are consistent with what was reported

in the SRS manual, where alphas were above .90 in both clinical and normative samples.

Individually, SRS scores for all the teens were in the "mild-moderate" to "severe" range, with the exception of one score, which was in the normal range. The teen that had the score in the normal range also had the AQ score that was an outlier, and therefore not consistent with ASD symptomatology. The principal researcher followed up with the primary parent who participated in the study, to discuss this finding. The parent stated that the teen had been diagnosed as a very young child, with PDD-NOS and that their diagnosis was clearly outdated and that they would soon be reassessed again. The decision was made to include this teen in the study, based on information from the parent and the previous diagnosis that was made by a qualified clinician. Additional information collected at the time of the screening also led to the decision to include the teen in the study. One of the parents reported that the teen didn't have get-togethers, nor did the teen carryout conversations on the phone. It was also reported that the teen was in a modified curriculum at school and had been teased and/or bullied in the recent past. Additionally, it was suspected that the teen may not have had a clear understanding of the difference between a friend and an acquaintance. During the screening interview, the teen named over nine people whom they thought were their friends. Therefore, all of the aforementioned information led to the decision to include the teen in the study, regardless of the teen's scores on the SRS and the AQ.

Social skills improvement system (SSIS; Gresham & Elliot, 2008). In contrast to Laugeson et al. (2009), to assess social skills improvement the Social Skills Improvement System (SSIS) was substituted for the Social Skills Rating Scale (SSRS), as the SSIS was designed to replace the SSRS. The SSIS includes updated norms and improved psychometric properties, as well as new subscales. The SSIS is a parent questionnaire, contains 79 items and took approximately 20 minutes to complete. This measure was used to assess the teenager's social skills and problem behaviors and was completed by parents who rated the degree to which their teenager exhibited each behavior item as either "never," "seldom," "often," or "almost always." Higher scores on the social skills scale indicate better social functioning and lower scores on the problem behavior scales are indicative of better behavioral functioning. The SSIS demonstrated adequate internal consistency with the alphas ranging from .90 to .97 for the social skills and problem behavior subscales, at pre- and post-treatment, and follow-up. These alphas are consistent with the alphas reported in the SSIS manual, where alphas were in the mid- to upper .90s for social skills and problem behaviors.

Quality of play questionnaire (QPQ; Frankel & Mintz, 2008). This measure consists of 12 items and was administered to teenagers and parents independently to assess the frequency of the teenager's get-togethers with PEERS during the month and the level of conflict during the get-togethers. There are 10 items which compose the conflict scale and teenagers and parents were asked to independently rate their peer conflict on a four-point scale (e.g., teased or criticized each other). The last two items on the measure ask teenagers and

parents to independently estimate the number of hosted and invited get-togethers the teenager had during the previous month.

Test of adolescent social skills knowledge (TASSK; Laugeson & Frankel, 2006). The TASSK consists of 22 items and was developed specifically for the PEERS program. This test was administered to the teenagers to assess their knowledge about the specific social skills that were taught during the intervention. Higher scores on this test reflect greater knowledge of the teenager's social skills. This test was developed in 2006 by Elizabeth Laugeson and Fred Frankel and is available in Laugeson and Frankel (2010). The TASSK demonstrated adequate internal consistency with Cronbach's alpha being .72 at pre-test.

Friendship qualities scale (FQS; Bukowski, Hoza & Boivin, 1994). The FQS was utilized by the teenager as a self-report measure and assessed the quality of best friendships. This scale consists of 23 yes/no questions from five different subscales (companionship, help, closeness, security, and conflict). Teenagers were instructed to identify their best friend and to keep this friendship in mind during completion of this measure. Higher scores on this measure are indicative of better quality friendships. The FQS demonstrated adequate internal consistency with Cronbach's alpha being .88 at pre-test.

Social anxiety scale (SAS; La Greca & Lopez, 1998). The SAS was completed by both parents and teenagers independently. The scale consists of 22 items that make up three subscales: Fear of Negative Evaluation; Social Avoidance and Distress specific to new situations or unfamiliar PEERS; and Social Avoidance and Distress that is experienced more generally in the company

of PEERS. The SAS (parent) demonstrated adequate internal consistency with Cronbach's alpha being .83 at pre-test. Additionally, internal consistency was also adequate for the SAS (teen) outcome measure, with Cronbach's alpha being .88 at pre-test.

Program Implementation Measures

Treatment fidelity. Treatment fidelity was documented with weekly fidelity checklists, which covered all components of the intervention. During each session, an observer (one in each group), checked off the components that were implemented. At the conclusion of the PEERS session, the coaches handed in their weekly checklists, which were reviewed by the principal researcher. This was carried out in order to determine the percentage of content/material that was implemented within each of the 14 sessions.

Treatment Quality. In order to assess treatment quality of the interventions, both parent and teen sessions were video recorded. To assess the quality of teaching that was conducted in the teen and parent PEERS classrooms, an adapted Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2006) protocol was utilized. The CLASS assesses various dimensions of teacher-student interactions including: Emotional Support (positive climate, teacher sensitivity, regard for student perspectives); Classroom Management (behavior management, productivity, instructional learning formats); Instructional Support (concept development, quality of feedback, language modeling); and Student Outcome (student engagement). An additional construct labeled Peer-to-Peer Interactions was added to the CLASS. This construct involved examining

opportunities for peer interactions as well as the quality of those interactions. Appendix B includes a description of the constructs and the rating scale. Ratings for the CLASS fall along a scale from 1-7, with lower scores indicating low quality, whereas higher scores indicate higher quality.

The Classroom Assessment Scoring System (CLASS) coders (one graduate student, the principal researcher, and the supervisor of the study) were: trained in the coding protocol; and were required to reliably code video training clips before coding the teen or parent recordings of the sessions. All reliability video clips were master-coded by a group of researchers, educators, and designers of the observations system. All observers for the present study were required to code five reliability clips independently (without discussion), and had to score within one point of the master code on 80% of their scores to be deemed reliable and ready for independent coding. Inter-rater reliability was calculated using results from these initial clips, and as a team the coders were within 1 point of the master code 85% of the time (range 72%-100%) across all dimensions. In addition, the intraclass correlation was .84, considered a good level for observational assessments (Cicchetti & Sparrow, 1981).

In monitoring implementation fidelity through checklists, inter-rater agreement and documentation of additional interventions, the principal researcher enhanced the reliability of treatment delivery, in addition to the validity of inferences being made due to the treatment intervention.

Results

Prior to statistical analyses, all data entries were examined for accuracy and/or missing data and it was determined that there was no missing data. Descriptive and inferential statistics were used in the present data analysis. The results will be described in three parts. First, data describing the participants and group characteristics are presented. Second, PEERS implementation fidelity and quality analysis are described. Finally, results from a series of one way repeated measure ANOVAs, followed by Bonferonni post-hoc testing on significant results from the ANOVAs are presented to address the study's questions regarding PEER treatment effectiveness.

Group Characteristics

As previously stated, the teen group was comprised of seven participants ranging from 12-17 years of age, with two of the participants being female. One teen was home-schooled, two teens were in modified curriculum, leaving four teens in mainstreamed education.

Because this study did not involve a comparison group, the principal researcher was interested in seeing how the group in the current study compared to the two groups included in Laugeson et al.'s (2009) study. The mean scores for demographic variables for the participants in the current study are presented in Table 1. All means scores at baseline were roughly equivalent, with the exception of Vineland scores, and the SSIS score. The mean baseline score for the SSIS for the current group fell in the 'average' range (refer to table 3), whereas the mean baseline scores for the SSRS for Laugeson's groups fell in the 'below average' range. It is speculated that this difference may in part, be due to the fact that the

current study is using the SSIS instead of the SSRS which was designed to replace the SSRS. As stated previously, the SSIS includes updated norms and improved psychometric properties, as well as new subscales.

The Vineland scores for the present study were higher when compared to the groups in Laugeson et al.'s (2009) study. This larger mean for the current study is likely attributed to the small number of participants. The current study had 7 participants, whereas Laugeson's study had 17 participants in the treatment group and 16 participants in the delayed treatment control group. It should be pointed out that the range for standard deviations for all three Vineland scores in the current study was from 11.7 – 20.8, whereas the range for Laugeson's study was 6.2 – 8.5. This difference implies greater variability in the current study's group. Moreover, in Laugeson et al.'s (2009) study, there was greater diversity of ethnic backgrounds for both groups, with the percent Caucasian being 35 and 50 percent, respectively. In the current study the number is much higher, with 71.4 percent identifying as Caucasian. It is suspected that this is likely attributable to the small number of participants in the current study as well as the way in which recruitment was conducted. Laugeson et al.'s (2009) study involved a much larger applicant pool to recruit from, as participants were recruited from Centers and schools throughout Southern California. The current study, on the other hand, recruited participants from one major city in Alberta as opposed to a larger portion of the province.

Treatment Fidelity & Quality of Implementation

Results from the fidelity checklists for the PEERS teen sessions revealed 100% concordance across the 14 sessions, concerning the curriculum components that had to be taught each week. Fidelity checklists for the PEERS parent sessions revealed that the parent leader implemented 98% of the curriculum content across the 14 sessions. More precisely, 100% of the curriculum content was implemented for 13 of 14 parent sessions. In session 7, 80% of the content was covered. At the conclusion of session 7, the coach leader informed the principal researcher that some of the new content could not be covered as extra time was spent discussing the previous homework assignment as well as other concerns that were presented. When queried as to whether it was 'on' or 'off' topic, the group leader had stated that all content discussed was very relevant to the PEERS curriculum and that parents weren't going off topic for the sake of their own personal knowledge/learning. The group leader had informed all of the parents during the first session that if any parents were to go 'off-topic' that she would have to bring it back to the group and other concerns could be discussed privately, at the end of the sessions if necessary. The group leader reported that for the most part, the parents respected this 'rule' and that barely any time was used for redirecting the parents.

The CLASS was utilized to assess quality of implementation of the PEERS program. Eighty percent of the parent sessions and the teen sessions were coded. Thirty percent of the teen and parent sessions were re-coded by a different coder to ensure reliability. The inter-rater correlation was .88 for the parent sessions and .92 for the teen sessions, both of which are considered good levels

for observational assessments (Cicchetti & Sparrow, 1981). Table 2 reveals mean scores for both the parent and teen sessions, across the 11 CLASS dimensions. As can be seen in the table, mean scores suggest a high quality of implementation in both the parent and teen sessions across all CLASS constructs (Emotional Support, Classroom Management, Instructional Support, Student Outcome, as well as Peer-to-Peer Interactions).

Treatment Effect

Parent reported outcome measures.

ANOVA's were carried out on mean scores of each dependent measure to assess whether or not there were significant differences for the effect of time (pre-, post-treatment, and follow-up). Statistically significant differences were noted for the following parent measures: SRS, Wilks' Lambda = .20, $F(2,5) = 9.88$, $p = .05$, multivariate partial eta squared = .80; SSIS-Social Skills, Wilks' Lamba = .29, $F(2,5) = 6.15$, $p = .02$, multivariate partial eta squared = .71; and QPQ-host, Wilks' Lamba = .25, $F(2,5) = 7.44$, $p = .03$, multivariate partial eta squared = .75. Post-hoc testing was carried out using the Bonferonni statistical procedure, on all significant results to reveal exactly where the significant differences were (i.e., between Time 1 and Time 2, Time 2 and Time 3, Time 1 and Time 3). Results for the SRS pairwise comparisons revealed borderline significance, indicating a decrease in ASD symptomatology between Time 1 and Time 2 ($p = .05$), and a significant difference was found between Time 1 and Time 3 ($p = .01$), indicating further reduction in ASD symptoms. Pairwise comparisons for SSIS-Social Skills revealed a significant difference between Time 1 and Time 3 ($p = .05$) which

indicate that by follow-up, parents noticed an increase in their teen's social skills. Results for the QPQ-host pairwise comparisons revealed a significant difference between Time 1 and Time 2 (p = .03), indicating that there was a significant increase in the amount of hosted get-togethers as per parent reporting.

Although there was an overall decrease in the number of problem behaviors reported on the SSIS across the three periods of data collection, the decrease failed to reach significance Wilks' Lamba = .60, $F(2,5) = 1.68$, p = .28, multivariate partial eta squared = .40. However, it should be noted that the mean score for the group, fell within the average range. This suggests that overall, the group did not experience many concerns with regards to problem behaviors. Social anxiety as per parent report on the SAS also failed to reach significance across the three time periods, Wilks' Lamba = .48, $F(2,5) = 2.76$, p = .16, multivariate partial eta squared = .53. This indicates that overall, parents did not perceive a decrease in their teen's level of social anxiety. Additionally, the QPQ-invited failed to reach significance, Wilks' Lamba = .49, $F(2,5) = 2.65$, p = .16, multivariate partial eta squared = .51. These results indicate that there was not a significant increase in the amount of get-togethers that teens were invited to across the three time periods of data collection.

Teen reported outcome measures.

For the following two teen outcome measures, statistically significant differences were found (refer to table 4): SAS, Wilks' Lambda = .24, $F(2,5)$ = 8.14, p = .03, multivariate partial eta squared = .77; and TASSK, Wilks' Lambda = .06, $F(2,5) = 38.30$, p = .001, multivariate partial eta squared = .94. Post-hoc

testing using the Bonferonni statistical procedure was carried out on both of the outcome measures. Results for the SAS pairwise comparisons revealed that there was a significant difference between Time 2 and Time 3 (p = .01), which indicates a reduction in anxiety that the teens were experiencing. Pairwise comparisons for the TASSK revealed significant differences between Time 1 and Time 2 (p = .000), and Time 1 and Time 3 (p = .001), indicating an overall improvement in knowledge of social skills.

Although there was an increase in the group mean score from Time 1 to Time 2 for friendship quality as per teen report on the FQS, results failed to reach significance Wilks' Lamba = .79, $F(2,5) = 0.68$, p = .55, multivariate partial eta squared = .21. These results suggest that overall, teens did not perceive much improvement in the quality of their best friendship. Results for the QPQ-host and QPQ-invited also failed to reach significance; Wilks' Lamba = .58, $F(2,5) = 1.84$, p = .25, multivariate partial eta squared = .42 and Wilks' Lamba = .57, $F(2,5) = 1.88$, p = .25, multivariate partial eta squared = .43. This suggests that teens did not experience an increase in the amount of get-togethers they hosted over the three time periods. Likewise, there was not an increase in the amount of get-togethers that they were invited to.

Discussion

This study represents one of the first attempts to examine the effectiveness of the PEERS program, in a community setting. Using a one group longitudinal design, results revealed that teens in the PEERS program made significant improvements with their social skills, reduced their social anxiety, and displayed

reductions in their autistic symptomatology. Importantly, improvements with social skill knowledge and social anxiety, as well as autistic symptomatology were maintained three months beyond program completion. Additionally, an assessment of the quality of program delivery and program implementation monitoring checklists revealed that the program was implemented as intended (i.e., with adherence), with high quality instruction across both the parent and teen sessions.

The current study adds to the research literature regarding the PEERS program, a social skill and friendship training program for teens with ASD, (Laugeson & Frankel, 2010) in four important ways. First, this study was carried out in a local community setting in Edmonton, Alberta as opposed to a clinical/research treatment setting, by professionals not involved in the development of the program. Second, this study involved additional outcome measures that explored changes in autism symptomatology and social anxiety. Third, the present study involved a post-treatment follow-up period, in order to assess treatment gains after the conclusion of the PEERS program. Finally, this study assessed the treatment fidelity of the implementation of the PEERS program. This was done through weekly fidelity checklists, as well as through assessing the quality of instruction in both the teen and parent sessions, using an adaptation of the Classroom Assessment Scoring System (CLASS).

Improvements in Skills Associated with Autism

Overall, the findings revealed that many positive gains were achieved by students who participated in the program. Significant improvements were noted

for three parent reported outcome measures and two teen reported outcome measures. Similar to the results found by Laugeson et al. (2009), teens reported improvements in knowledge of social skills relevant to making and keeping friends and their parents observed improvements in their teen's social skill behaviors (see figures 1 & 2). The present findings differed from Laugeson et al. (2009) in that following the program, students did not report increases in peer get-togethers.

Reductions in autism symptoms and anxiety. In regard to autism symptomatology, all but one teen began the study with a score in the highest classification ("severe") range (as reported by parents) on the Social Responsiveness Scale (SRS; Constantino & Gruber, 2005). After program completion, parents perceived a decrease in their teen's ASD symptomatology. Not only were there significant decreases from pre- and post-treatment and follow-up (see figure 4), but five of the teens actually dropped to a lower classification ("mild-to-moderate") range, based on their SRS scores and one of the teens dropped two classification ranges ("normal"). The lone teen that was classified in the "normal range" at the onset of the study also experienced decreases in autism symptomatology at program completion according to parent report.

Regarding social anxiety, while parents did not perceive a significant reduction in their teen's anxiety, the teens themselves reported significantly less social anxiety at program completion. Results were interesting whereby a 'sleeper effect' was noted, with significant change occurring from post-treatment to

follow-up. Moreover, for the majority of the participants, their social anxiety actually increased from pre- to post-treatment (see figure 5). It is suspected that during the program, as teens were actually becoming more aware of their deficiencies regarding their social skills, their anxiety subsequently increased. Furthermore, for six out of seven teens, the anxiety levels at follow-up were below those reported at pretest representing an overall decline in anxiety subsequent to program completion.

Get-togethers. Laugeson et al. (2009) found that teens reported hosting more get-togethers at post-treatment; however, parent reports at post-treatment did not concur. In the current study, we found the opposite: teens did not report that they were hosting more get-togethers with friends after the program, but parents reported that they were. Similar to Laugeson's study, neither parents nor teens reported an increase in the amount of get-togethers that their teen was invited to. Taken together, it appears that some aspects of the program are not consistently generalized to more teen get-togethers, either hosted or invited. It is suspected that social isolation of the participants in the current study contributed to a lack in the number of get-togethers that teens hosted and also a lack in the number of get-togethers that teens were invited to. In Laugeson et al.'s (2009) study participants had a higher mean score for both the amount of get-togethers the teens hosted, as well as the amount of get-togethers teens were invited to at the onset of the study. The majority of participants in the current study were neither invited to get-togethers nor hosted any get-togethers before they began the PEERS program. This may indicate that the teens in the current study were more

socially isolated in comparison to those teens in Laugeson's study. For example, homework assignments involving get-togethers seemed to be the most challenging part of the curriculum for the teens in the present program. Teens and parents struggled with this aspect of the program, reporting that it would be "weird" asking someone over for a get-together that they hardly knew.

Past research looking into anxiety and social worries in children with AS has revealed that both children and their parents report more anxiety and social worries when compared to typically developing children (Russell & Sofronoff, 2004). Research suggests that lack of social skills and/or unusual social interaction can lead to social rejection/isolation and this can subsequently lead to increased levels of anxiety. Therefore, it seems plausible that for teens in the current study, pressure to have get-togethers was subsequently leading to an increase in anxiety. This may explain why for the majority of the teens, get-togethers were an ongoing issue throughout the program. Immediately post-treatment, every teen except for one, had at least one get-together. This contributed to higher mean scores at post-treatment data collection. Generally speaking, however, across all of the teens it is safe to say that it does not appear that participation in the program resulted in more get-togethers (see figure 3).

It is also possible that timing of the study may also have contributed to a decrease in get-togethers. More specifically, the study concluded towards the end of the school year and follow-up data was collected in August. Therefore, teens would not have had other classmates readily accessible to them, to plan get-togethers with throughout the summer. Although timing of the study may have

impacted the number of opportunities for get-togethers, it is suspected that while teens did significantly increase their knowledge of social skills, there may be a gap between knowledge and action. The teens may be able to initiate more get-togethers with more supports in place to help them do so. Rubin and Thompson (2002) point out how important it is for parents to help 'build bridges' to other children. Although one of the goals of the PEERS program is to have teens develop the skills to initiate more interactions with others, parents can help to facilitate this process. Rubin and Thompson (2002) suggest that parents can initiate conversations with other parents and their children and subsequently, this modeling may help teens to develop more courage and confidence with initiating interactions. These authors also suggested that parents host get-togethers with other families, such as backyard barbecues for example, which could help promote peer connections among new/old peers. Rubin and Thompson (2002) also highlighted that it is important for teens to know that their parents recognize their efforts and provide them with encouragement and praise when they take steps to initiate interactions with others. While the praise and encouragement were components of the parent training sessions, the modeling activities described by Rubin and Thompson (2002) were not. These explicit modeling activities may be necessary for some teens who need extra support to make the links between knowledge and action.

Throughout the PEERS program teens were encouraged to join extracurricular activities. This was also an area of challenge for the majority of teens and parents. It is suspected that had teens been able to participate in

extracurricular activities, they would have had more access to other teens who shared common interests with them. Subsequently, this may have led to more success with get-togethers. As pointed out in Kasari et al. (2001), as children enter the older grades at school, peer relationships tend to become more selective. Kasari et al. (2001) also noted that children with ASD are more often found to be on the periphery of social networks within their classrooms, their networks tend to be smaller, friendships tend to be viewed as unilateral as opposed to reciprocal, and the quality of friendship is poorer than their typically developing classmates. Taken together, it seems as though these children are already at a disadvantage when entering older grades. Therefore, it is important for parents to facilitate teen involvement in extracurricular activities that teens may be interested in, in order to gain access to peers with common interests. As pointed out in Ladd (2005), common interests enhance interpersonal attractions towards others, and this is often the basis for forming new peer relationships.

A couple of the teens in the group were already participating in extracurricular activities at the onset of the study. These teens were among those at follow-up who were still maintaining and even increasing the frequency of their get-togethers. Some of the reasons for not joining extracurricular activities on behalf of parents and teens included: lack of availability regarding resources and time; and lack of interest in discovering an extracurricular activity that was suitable for the teen. As a possible modification to the program, more time could be spent on supporting parents and teens in trying to find suitable extracurricular activities that are both available and inspire motivation on behalf of the teens.

A conflict scale was also included in the measure that assessed get-togethers. It was used to measure the level of conflict that was observed by the parents during the teen get-togethers. For most of the parents and teens the conflict scale was not applicable because most teens did not have any get-togethers and therefore was not used in the principle analysis. Additionally, for many of the get-togethers that did occur, the parents had often not been present for the get-together, and therefore could not accurately report on the level of conflict. However, two of the parents who completed the scale reported that during get-togethers they were present for, they noticed that they went "more smoothly" than they would have before their teen participated in the PEERS program. When queried as to what "more smoothly" meant, the parents had stated that there would have been more conflict with regard to the guests not following the rules, or with deciding what to do during the get-together. This suggests that perhaps there was a reduction in conflict for some of the teens as a result of the program. This feedback is important to highlight as past research has demonstrated that conflict leads to fewer get-togethers among children with ASD (Frankel et al., 2010; Sigman & Ruskin, 1999).

Friendship quality. Measuring friendship quality was also a difficult task for the majority of the teens. In order to assess friendship quality the teens had to name a best friend, and then respond to a series of questions, while keeping that best friend in their mind. As the majority of the teens did not have best friends, this was hard for them to do. One of the teens recorded their sibling as a best friend; another recorded the name of someone they described as more of an

acquaintance, while other teens chose someone who they spent most of their time with in the recent past. Therefore, it is questionable as to validity of this measure, when used with a sample of teens who are socially isolated and therefore, may have spent a minimal amount of time with those they chose to record as their best friend (i.e., it is not necessarily surprising that friendship quality wouldn't increase if much time wasn't spent with the 'best friend').

Durability ('Stick-ability') of the Program

Ospina et al. (2008) conducted a systematic review examining the clinical efficacy of behavioural and developmental interventions for improving symptoms of ASD. The study found that most efficacy research failed to measure generalizability and maintenance of outcomes. One of the recommendations for future research to meet higher clinical standards, evaluations of interventions should include implementing longitudinal designs that allow for sufficient follow-up to evaluate treatment effects. Few clinical efficacy studies, including the study carried out by Laugeson et al. (2009) involve follow-up data collection.

The present evaluation of the PEERS program demonstrated durability of the treatment effects in a three-month follow-up analysis. Improvements were made and maintained with regards to social skills, as measured by both parents and teens three months after ending treatment. Parents also reported a decrease in autistic symptomatology in their teens. This decrease persisted at follow-up, thereby illustrating that teens were becoming more socially responsive after the conclusion of program implementation. Furthermore, social anxiety as measured by teens significantly declined by follow-up. Taken together, these results indicate

that upon completion of the PEERS implementation, program effects persisted three months beyond treatment.

Quality of Implementation

Characteristics related to the implementation integrity of a program can have a significant impact on the effectiveness of the intervention (Wilson et al., 2003). Implementation integrity has been defined as the degree to which a program is delivered as intended. Past research indicates that as effective programs expand and the number of communities replicating the original program increases, the quality of delivery begins to vary widely and program changes will often be made to match community characteristics (Greenberg, Domitrovich, Graczyk, & Zins, 2002). When this happens, the implementation integrity becomes as important as the program itself. For example, estimates indicate that, on average, when some interventions "go to scale" they utilize only 54% of the methods and only 71% of the content considered representative of best practices (Gottfredson, & Gottfredson, 2002). This means that almost 30% of the content is reduced and the instructional methods vary considerably from those originally intended by the program.

With the growing evidence of the strength and impact of the PEERS program, it is important to ensure that the PEERS program is implemented as it was intended. Ensuring a high degree of program implementation can be challenging and requires careful monitoring to be successful. In the present evaluations two methods were used to measure implementation: weekly fidelity checklists and observations of instructional quality.

The fidelity checklists revealed that all components of the program were implemented across both the teen and parent sessions. According to Greenberg et al. (2002), implementation integrity is facilitated by a clear program manual that specifies the model and procedures to be used in the intervention. In the view of the principal researcher, the 'usability' of the PEERS program manual contributed to the ease with which the program could be implemented. The facilitator of the parent group, though not formally trained in the PEERS program, also reported the PEERS manual was very easy to follow. Both facilitators agreed that the manual itself was well laid-out, in a user-friendly style, where very little prep time was needed before each session.

Based on the results from the CLASS (Pianta, La Paro, & Hamre, 2006), which assessed the quality of instruction, it was revealed that the PEERS program can be implemented with a high degree of instructional quality. A long line of research has indicated the utility of observations to gage the qualities of effective teaching (Gage & Needles, 1989). The CLASS is notable among these protocols as it evaluates the quality of classroom interactions based on how effectively teachers provide students with the emotional, organization, and instructional supports needed to maximize learning (Hamre, Pianta, Mashburn, & Downer, 2007). Luckner and Pianta (2011) have demonstrated that the CLASS can be used to examine how the quality of teacher instructional behavior is associated with student social and academic benefits. The finding that the ratings of instructional quality was high for the present implementation of the PEERS is important as it

confirms that instructional quality can be attained by individuals other than the program developers.

Implementation in a Community Setting

Previous research indicates that many intervention programs are implemented unsuccessfully or with poor quality and that there are certain factors that can contribute to successful implementation of evidence-based programs in community settings. As pointed out in Langley et al. (2010), community partnerships, a collaborative team, program 'buy-in' (from professionals as well as parents), and parental involvement/engagement were discovered to all be key elements to successful implementation of intervention programs. These key elements described by Langley et al. (2010) were components of the present PEERS implementation. For example, three other team members assisted in the implementation and contributed to the program's successful implementation. More specifically, two coaches in the teen group were needed at various times throughout the 14 weeks for role-play activities. Because there was an odd number of teens in the group (7 teens), it was necessary (at times) to have one coach act as a peer in behavioral rehearsals, while the other coach helped the principal researcher go around the room and monitor the behavioral rehearsals the teens were engaging in, and help provide support as needed.

Although in theory, the parent group could have been carried out solely by the parent facilitator (because support for role plays was not required as it was in the teen sessions), the addition of another coach for support was deemed as important for successful program implementation. Langley, Nadeem, Kataoka,

Stein, & Jaycox (2010) suggest that having some form of support or consultation in place can facilitate implementation success. The parent facilitator and coach often consulted with one another concerning the information that was shared during the parent sessions (in the presence of the rest of the team members), and both members stated that they found it beneficial to share their ideas and have the extra 'in-group' support provided by the additional team members. All team members were deemed imperative (by the principal researcher) to the successful implementation of the program. Whether the program could be implemented without this level of support should be explored further.

As noted previously, the principal researcher and the parent facilitator regarded the PEERS program as being very easy to implement. Because the manual was well laid-out and the program was very easy to follow, the program was easy for all the team members to 'buy-into.' As previously stated, Langley et al. (2010) pointed out that 'buy-in' is one of the keys to successful program implementation.

Funding has also been noted as one of the barriers to successful implementation of programs (Langley et al., 2010).The PEERS program is very cost-effective when considering the training and implementation costs. In this study the principal researcher was the only person who attended formal training in California. Training took place over four days and the total cost of the training, not including travel expenses was $2200.00. Had every member of the team needed to be formally trained in the PEERS programming, the total cost of training would have equaled approximately $11000.00. However, because the

principal researcher was formally trained and the manual is very user-friendly, it was very easy to successfully, informally train the rest of the team members.

The study was carried out at the Centre for Autism Services Alberta where organizational efficiencies are already in place to support the implementation of autism programming. The staff had a background in ASD and moreover, were more than accommodating in helping organize space and in providing professionals to assist in the implementation of the PEERS program. All costs associated with use of the facility and the staff members were completely covered by government funding that provides services for children of families with autism (i.e., Family Support for Children with Disabilities (FSCD)). These organizational and funding supports contributed to the ease with which this program could be implemented in a community setting.

Limitations

Similar to Laugeson et al. (2009), one of their limitations is also pertinent to the present study: parents may be biased in their answers on the outcome measures. One solution to this limitation would be to incorporate teacher responses on the outcome measures. Teachers may present with less bias, as they would not have the same involvement as the parents in the outcomes of the study or with the teenagers. Laugeson et al. (2009) pointed out that they had poor response rate from teachers, and that results from pre- and post-tests only revealed marginally significant differences between groups. Additionally, because most of the teens in this study had multiple teachers, it was thought that the teacher who may have been chosen for the study would only have been able to assess a

'snapshot' of the teenager's social skills during the day. Therefore, involvement from teachers was not solicited.

Another limitation of this study is that it lacks a control group. Although it was the intent of the principal researcher to run two groups (a treatment and a control group), recruitment did not yield enough participants to proceed with two groups. Therefore, when applicable, outcomes of the current study were compared to the groups in Laugeson et al.'s (2009) study. In order to ensure enough participants for two groups in future studies, it would be best if recruitment could take place within the community, a school division, as well as within clinical/residential treatment settings.

Because the PEERS curriculum was multi-faceted, it is hard to determine which aspects of the program were responsible for the effects in social skills improvement. However, the teens responded most enthusiastically during the following sessions: Good Sportsmanship; Teasing and Handling Embarrassing Feedback; Handling Bullying and Bad Reputations; Handling Disagreements; and Handling Rumors and Gossip. All teens were raising their hands more during these sessions, when responding to questions that were posed to the group. Additionally, more teens wanted to comment and share their personal experiences, as they pertained to the sessions.

Family Anecdotes of Program Effect

Check-in. By session seven of the PEERS program, the principal researcher completed a 'check-in' with each of the families. This was carried out on an individual basis, to gain insight on parents' perceptions of the program. This

was not a mandatory check-in, nor was it suggested in the manual. The principal researcher and the rest of the PEERS team decided that a check-in half-way through the program would be a good way to gain initial feedback and to further develop rapport with the parents, and let them know that their input was greatly valued. However, it is important to note that 'check-in' represented a modification to the program implementation.

It was of interest that halfway through the program parents were already starting to see treatment gains in their teens. Additionally, some of the parents reported that extended family members and/or friends of the family had also noticed changes in their teen. When queried as to what changes were observed by family and/or friends of the family, various parents noted the following: more awareness and confidence in social situations; teens were initiating/engaging in conversations with their parents, as well as their siblings and in some cases, extended family; one family was particularly amazed at how their teen was starting to participate in family conversations around the dinner table, because in fifteen years they had never observed the quality/quantity of participation; and better listening skills.

Skill generalization to the work environment. One of the teens in the study had a work experience placement (as per school curriculum) at a local grocery story in the Edmonton Area. Before the end of the study one of the parents excitedly informed the PEERS team and the other parents that the manager at the grocery store offered their teen a job at the store. The manager had informed the parent that they noticed a huge difference in the teen's social skill

abilities, whereby the teen was starting to engage and initiate interaction with the customers as well as the other employees. The teen also confidently shared this information with the group and seemed very pleased with their new opportunity. Therefore, it seems as though the PEERS program likely helped this teen further develop their social abilities, which in turn helped to prepare them for the expectations in the workforce.

Connecting over the phone. As the sessions carried on, parents were eager to share their teen's 'social-success' stories. Some parents noted how their teens connected with old friends and extended family members. When asked how this came about, parents reported that due to their child's isolation at school, it was often difficult for their teen to choose someone to conduct out-of-group phone calls with, so they chose to call old friends that they used to spend time with or extended family members that they didn't talk with very often. On occasion, these phone calls led to get-togethers for the teens, which were also part of the homework assignments based on the PEERS curriculum. Many of the parents shared how nice it was to see their teens carrying out a conversation on the phone, because it was something that they never witnessed them doing before.

Heightened awareness. Many of the parents commented how their teens had much more heightened awareness around social skills in general. More specifically, parents commented on how their kids were more apt to pointing out deficiencies in other kids' social skills. They reported that their teens were commenting on social skill deficiencies that characters/actors had during movies such as Hugo, or the TV show the Big Bang Theory. This observation on behalf

of the parents indicates/demonstrates generalization of PEERS learning, where kids are outside of the program and still maintain an awareness of social skills.

School improvement. Towards the end of the program, one of the parents was questioning the effect of the program on her teen's grade, in a class they had been struggling with since day one of school. The parent mentioned how her teen never received more than a grade of 65% in Language Arts and at the end of the PEERS program the teen "pulled-off" an 80%. The parent wondered if the program had contributed to some sort of "better insight, awareness, more confidence and improved perspective taking" with regards to the teen's Language Arts abilities.

More sportsmanlike. Many parents commented how they thought that the 'Sportsmanship' session subsequently led to smooth get-togethers with friends. Multiple parents reported that where meltdowns would have previously occurred due to 'unsportsmanlike conduct' (i.e., not following the rules), they were either ameliorated or substantially reduced. Essentially, parents stated that teens were more easily able to 'agree to disagree' so to speak.

Addressing additional areas of development. Additional comments from some parents revealed that parents would have liked the PEERS program to address information with regards to dating. Although none of the teens in the group were dating, many parents indicated that they were aware that their teen was becoming interested in the opposite sex and that introducing rules on dating etiquette would have been a helpful component of the program. It should be noted that research is currently being carried out to examine the implementation of an

adapted version of the PEERS program with young adults, 18-23 years of age, which addresses issues such as romantic relationships and dating etiquette (Laugeson & Frankel, 2010).

Program Implementation Recommendations

The following PEERS program modification recommendations have been derived from findings of the study, parent's impressions of the program, and are also based on the principal researcher's experience of implementing the program. Information included in this section pertains to: the length of the sessions; peer contact during the implementation of the program; an additional outcome measure; and commencement of the program.

It is the opinion of the principal researcher that the sessions be increased from 90 minutes to 120 minutes. While 90 minutes proved to be a sufficient amount of time, the sessions were usually completed without a minute to spare. It would have been preferable to increase the time by 30 minutes to have additional time to practice the newly learned skills, have extra time to address teen, and parent questions and comments. There were many times in the teen group where the facilitator had to redirect comments/questions of the teens because of the need to stick to the strict 90 minute schedule. Also, during the sessions where good sportsmanship was being practiced, it was clear that the teens were thoroughly enjoying their time playing sports in dyads/triads. Although the enjoyment of participation was not the primary focus, and whereas developing good sportsmanship skills was the main objective, it was nice to see the teens enjoying

the company of their peers. Thus, it would have been nice if extra time could have been provided to facilitate this peer engagement.

Many of the parents and teens commented that they wanted to be free to contact one another outside of the group, during the program. However, as per PEERS standards outlined in the manual, this was not encouraged because of how it could affect group dynamics and also treatment fidelity of the study. While this is an important consideration, it should be mentioned that it is unrealistic to think that teens will never have pre-existing relationships coming into these types of programs. This is especially the case if this program is going to be implemented for classroom dissemination in schools, and also in rural areas, where students and community members will likely be well-known to one another. Furthermore, although the purpose of the PEERS program is not to bring teens together to build friendships within the treatment group, developing friendships within the group may be a way for those teens who are socially isolated to build upon the skills they are learning, by putting into practice what they are learning and thereby hopefully, closing the gap between knowledge and action.

It may be beneficial for parents to be informed at the onset of the study that social anxiety may increase for their teen in order to alleviate any worries parents may have. It would be of interest to include a depression measure in future studies. Although this study addressed the issue of social anxiety, research suggests that social isolation can increase one's susceptibility to depression (American Psychiatric Association, 1994). Therefore, it seems reasonable to

include an outcome measure which will examine the existence of depression throughout the study.

Towards the conclusion of the program many parents commented on the timing of the program. Some had stated that it would be best to commence the program in the summer months or just at the onset of a new school year, especially if teens are transitioning into a new high school. Their rationale behind this thought was that the teens would have a 'fresh start' with new kids who wouldn't necessarily know them or know of their old 'reputation.' Some of the other parents were concerned though about how the skills would be practiced as per homework assignments if sessions were to be carried out in the summer, when teens would not have 'access' to classmates, as opposed to during the school year. It is of the opinion of the principal researcher that the best time would in fact be at the start of a new school year when teens would likely be in proximity to new classmates and potential friendships. Moreover, at the conclusion of the 14 weeks, teens would still have plenty of time to employ what they have learned, well before the onset of summer holidays.

Concluding Comment

The findings from this study demonstrated that the PEERS program can be successfully implemented in a community setting, by professionals not involved in the development of the program, while maintaining high fidelity to the program components and high quality instruction. Positive outcomes similar to Laugeson et al. (2009) were found in improved social skills and reduced anxiety for the teens that participated. Furthermore, gains were made and/or maintained at three-

month follow-up, illustrating durability of the PEERS program. Results from Laugeson et al.'s (2009) *efficacy* study and the current *effectiveness* study, demonstrate that the PEERS program can lead to lasting gains for teens with AS, HFA and PDD-NOS in the community setting.

Table 1

Mean scores for demographic variables (standard deviations are in parentheses)

Variable	*M*
Age (years)	14.7 (1.7)
Grade	9.4 (1.4)
Percent male	71.4
Percent mainstreamed	57.1
Percent caucasian	85.7
SES	61.8 (16.4)
KBIT-2 verbal IQ	94.1 (20.1)
Vineland-communication	84.7 (11.7)
Vineland-socialization	76.6 (20.8)
Vineland-composite	82.9 (18.6)
AQ	32.6 (11.7)

Note. Scores for KBIT and Vineland are represented as standardized scores, with a mean of 100 and standard deviation of 15. The KBIT provided a measure of Verbal IQ. Verbal IQ had to be 70 or above in order for a participant to be eligible to participate in this study. The Vineland provided a measure of adaptive functioning, in areas of communication, socialization, as well as an overall composite score. The Autism Quotient (AQ) is represented as an unstandardized, raw score. A score of 32 or more indicates significant symptomatology as per a diagnosis of ASD.

Table 2

Mean scores for CLASS constructs

Construct	*Mean Score*
Parent Sessions:	
Positive Climate	6
Teacher Sensitivity	5
Regard for Student Perspectives	5
Behavior Management	6
Productivity	5
Instructional Learning Formats	5
Concept Development	4
Quality of Feedback	5
Language Modeling	4
Student Engagement	5
Peer-to-Peer Interactions	5
Teen Sessions:	
Positive Climate	5
Teacher Sensitivity	5
Regard for Student Perspectives	5
Behavior Management	6
Productivity	6
Instructional Learning Formats	5
Concept Development	5
Quality of Feedback	6
Language Modeling	5
Student Engagement	6
Peer-to-Peer Interactions	5

Note. For the parent and teen sessions, means are based on ratings of 12 sessions. Ratings for the CLASS fall along a scale from 1-7, with lower scores indicating low quality, whereas higher scores indicate higher quality.

Table 3

Mean pre- and post-treatment and 3-month follow-up scores for parent outcome variables (standard deviations are in parentheses)

	Time			$F(2, 5)$	ES
Variable	1	2	3		
Parent measures:					
SRS-total	**79.3 (17.4)**	**65.6 (17.6)**	**62.4 (12.8)**	**9.88**	**.80**
SSIS-social skill	**87.0 (15.8)**	**94.1 (16.3)**	**98.0 (9.6)**	**6.15**	**.71**
SSIS-prob.bhrs.	113.6 (16.5)	111.0 (19.1)	108.9 (13.8)	1.68	.40
SAS	53.6 (9.7)	46.6 (9.3)	48.3 (9.9)	2.76	.53
QPQ-host	**0.3 (0.5)**	**2.1 (1.3)**	**1.7 (2.2)**	**7.44**	**.75**
QPQ-guest	0.3 (0.5)	0.7 (0.8)	0.6 (0.8)	2.65	.51

Note. Values for SRS are represented as T-scores, with a mean of 50 and a standard deviation of 10. The SRS is a measure of autistic symptomatology and favorable results should show a decrease over time. The SSIS scores are represented as standardized scores, with a mean of 100 and standard deviation of 15. The SSIS-social skill measures social skills and favorable results should show an increase over time. The SSIS-prob. bhrs. is a measure of problem behaviors and favorable results should show a decrease over time. The SAS is a measure of social anxiety as per parent report, and desirable results should decrease. The QPQ-host measures the amount of get-togethers the teen hosted in the last month (as per parent report) and the QPQ-guest measures the amount of get-togethers the teen was invited to in the last month (as per parent report). Desirable results would indicate an increase in get-togethers across the 3 time periods. The SAS and QPQ outcome measures are represented as raw, unstandardized scores.

Table 4

Mean pre- and post-treatment and 3-month follow-up scores for teen outcome variables (standard deviations are in parentheses)

	Time						$F(2, 5)$	ES
Variable	1		2		3			
Teen measures:								
SAS	**45.6**	**(9.9)**	**50.4**	**(9.7)**	**41.6**	**(13.4)**	**8.14**	**.77**
FQS	14.7	(3.0)	15.7	(3.2)	15.0	(3.6)	0.68	.21
TASSK	**13.1**	**(4.1)**	**23.1**	**(3.6)**	**23.0**	**(1.8)**	**38.30**	**.94**
QPQ-host	0.9	(1.9)	1.9	(1.2)	1.7	(2.2)	1.84	.42
QPQ-guest	0.6	(1.0)	0.9	(1.2)	0.4	(0.8)	1.88	.43

Note. All values represent raw, unstandardized scores. The SAS is a measure of social anxiety as per teen report, and desirable results should suggest a decrease in anxiety scores. The FQS measures friendship quality of the teen's 'best-friendship.' Favorable results should suggest an increase in friendship quality. The TASSK measures the teen's social skill knowledge as it pertains to the components learned in the PEERS program. Desirable results should indicate an increase in scores. The QPQ-host measures the amount of get-togethers the teen hosted in the last month (as per teen report) and the QPQ-guest measures the amount of get-togethers the teen was invited to in the last month (as per teen report). Desirable results would indicate an increase in get-togethers.

Figure 1

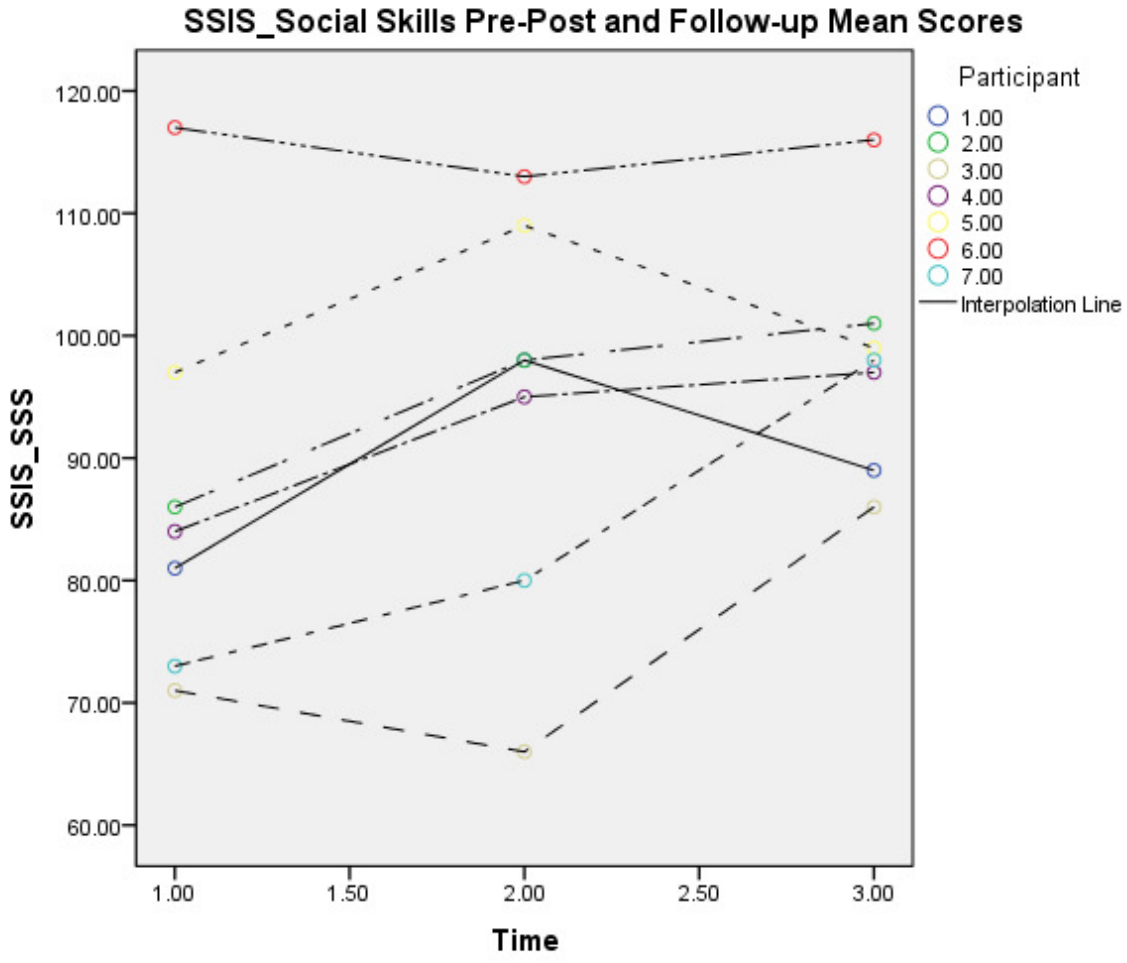

Figure 1. Individual scores for parent reports of social skills at pre- and post-treatment, and follow-up. Favorable results should suggest an increase in scores across the 3 time periods. This would indicate an increase in social skills.

Figure 2

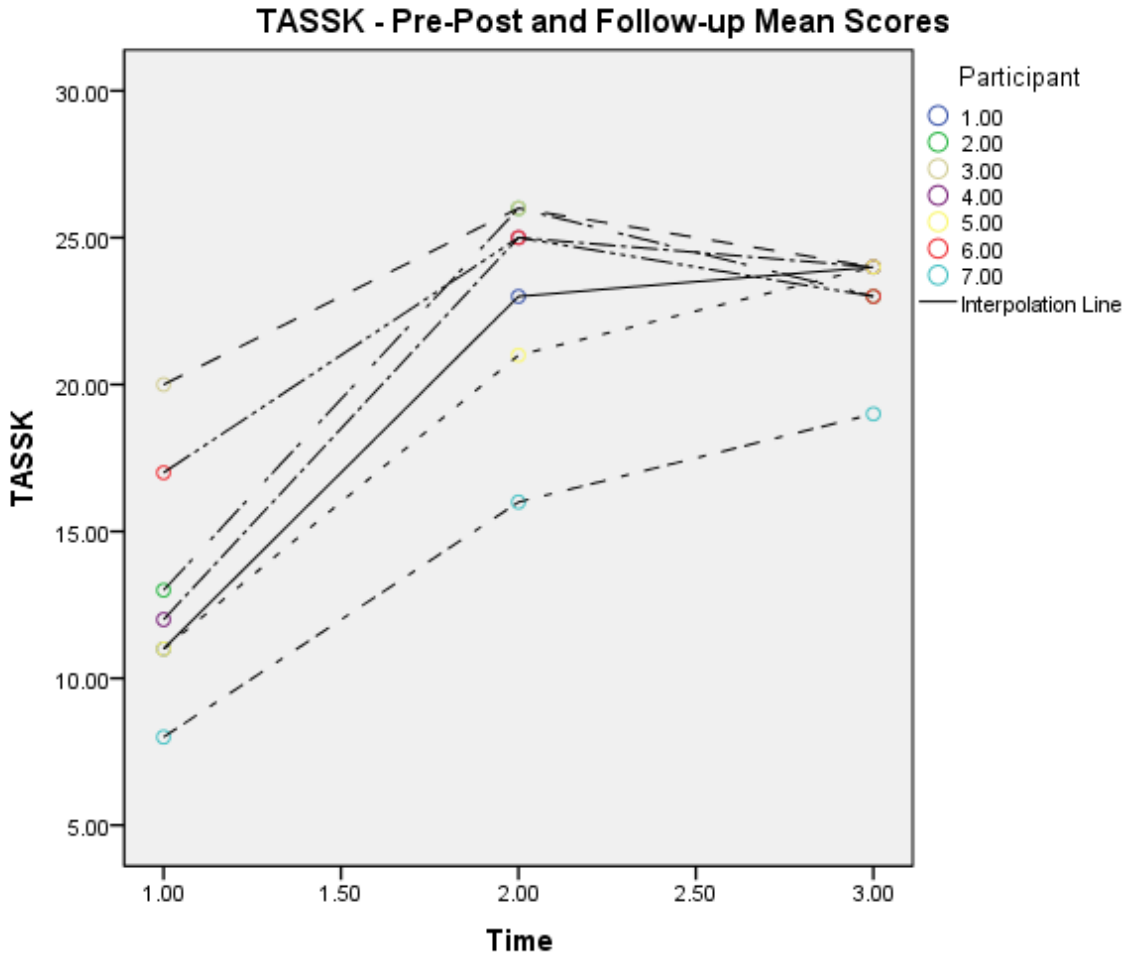

Figure 2. Individual scores for social skills knowledge as per teen report, at pre- and post-treatment, and follow-up. Favorable results should suggest an increase in scores across the 3 time periods. This would indicate an increase in knowledge of social skills relative to program components that were taught in the PEERS program.

Figure 3

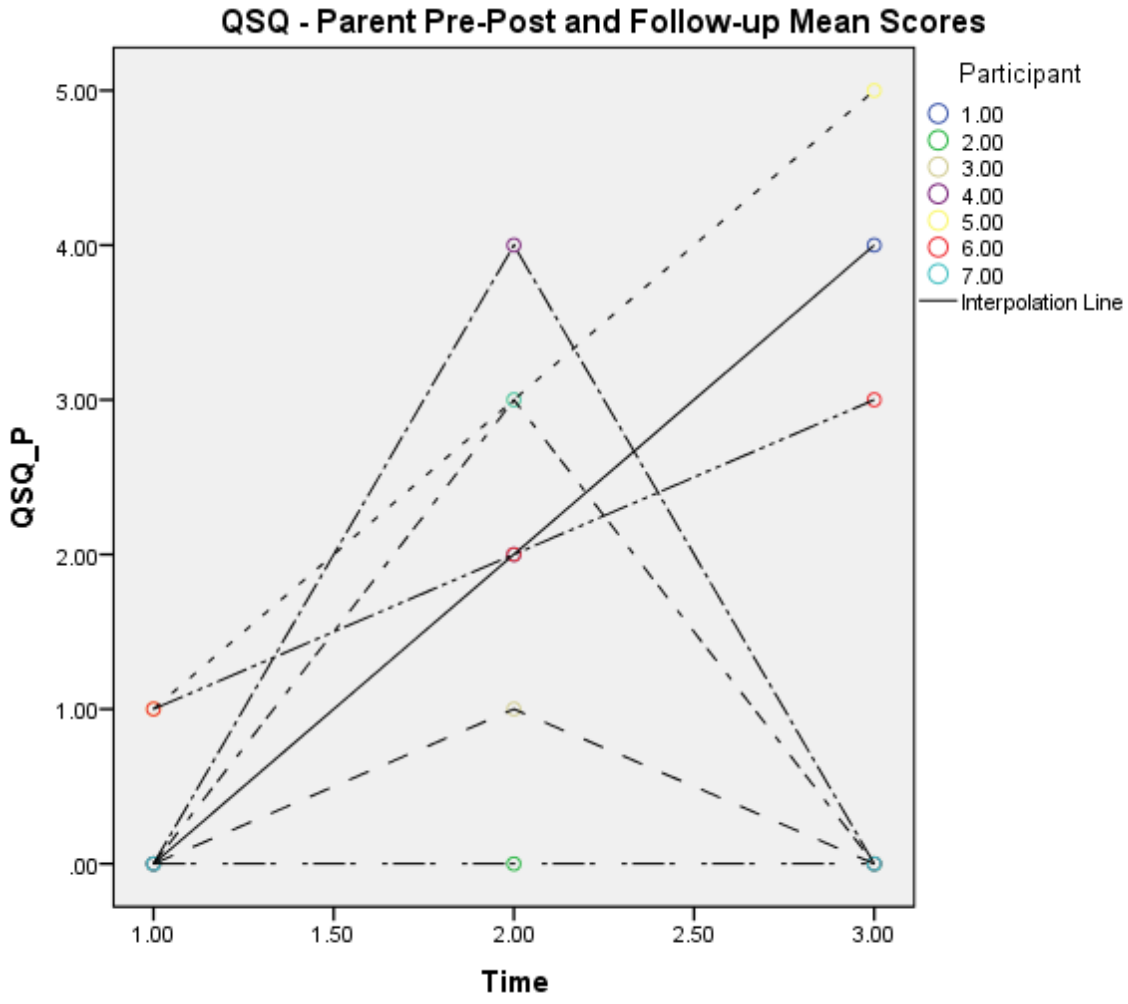

Figure 3. Individual scores for parent reports of hosted get-togethers at pre- and post-treatment, and follow-up. Favorable results should indicate an increase in the amount of get-togethers that were hosted across the 3 time periods, as per parent report.

Figure 4

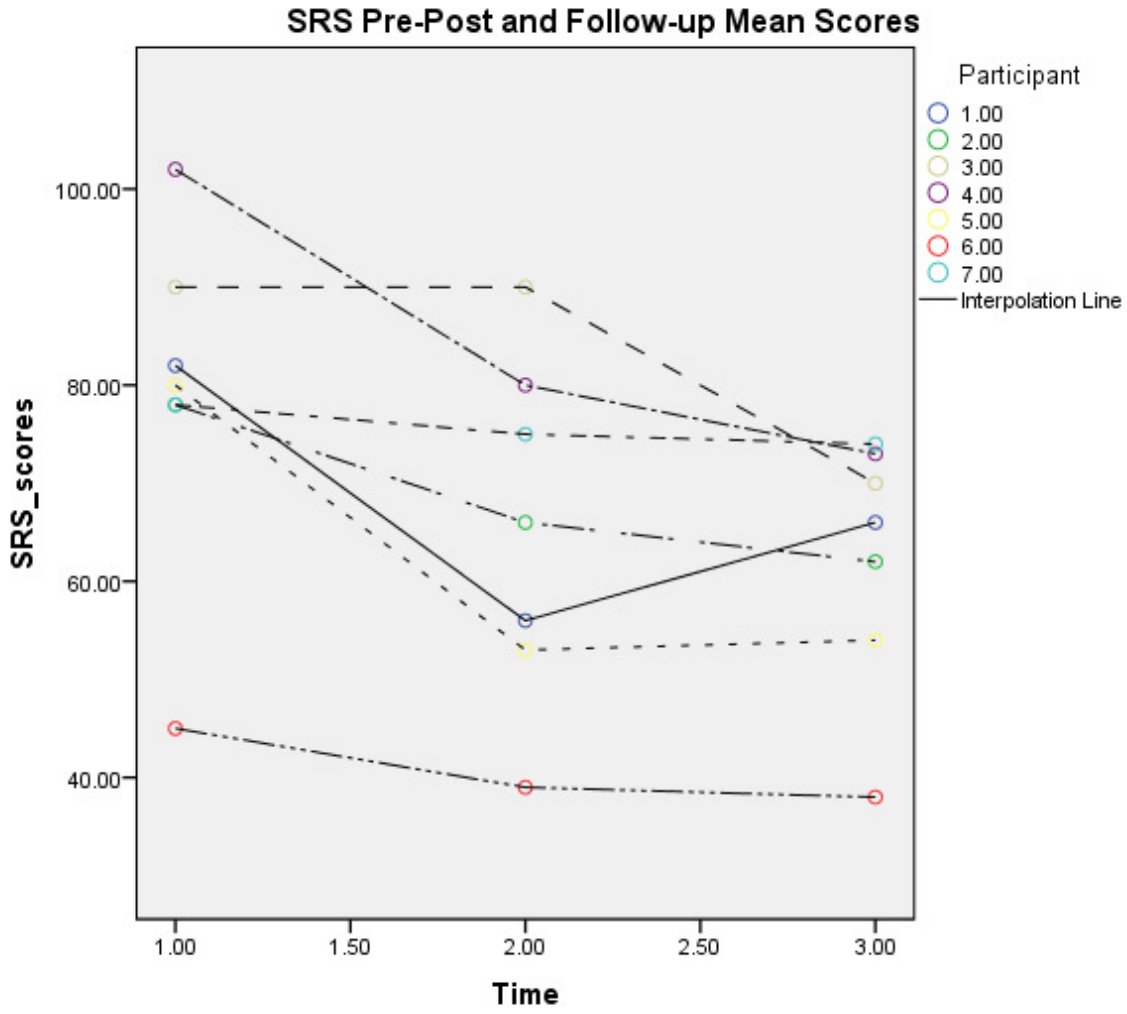

*Figure 4***.** Individual T-scores for social responsiveness scale, as per parent report at pre- and post-treatment, and follow-up. Favorable results should indicate a decrease in autistic symptomatology across the 3 time periods.

Figure 5

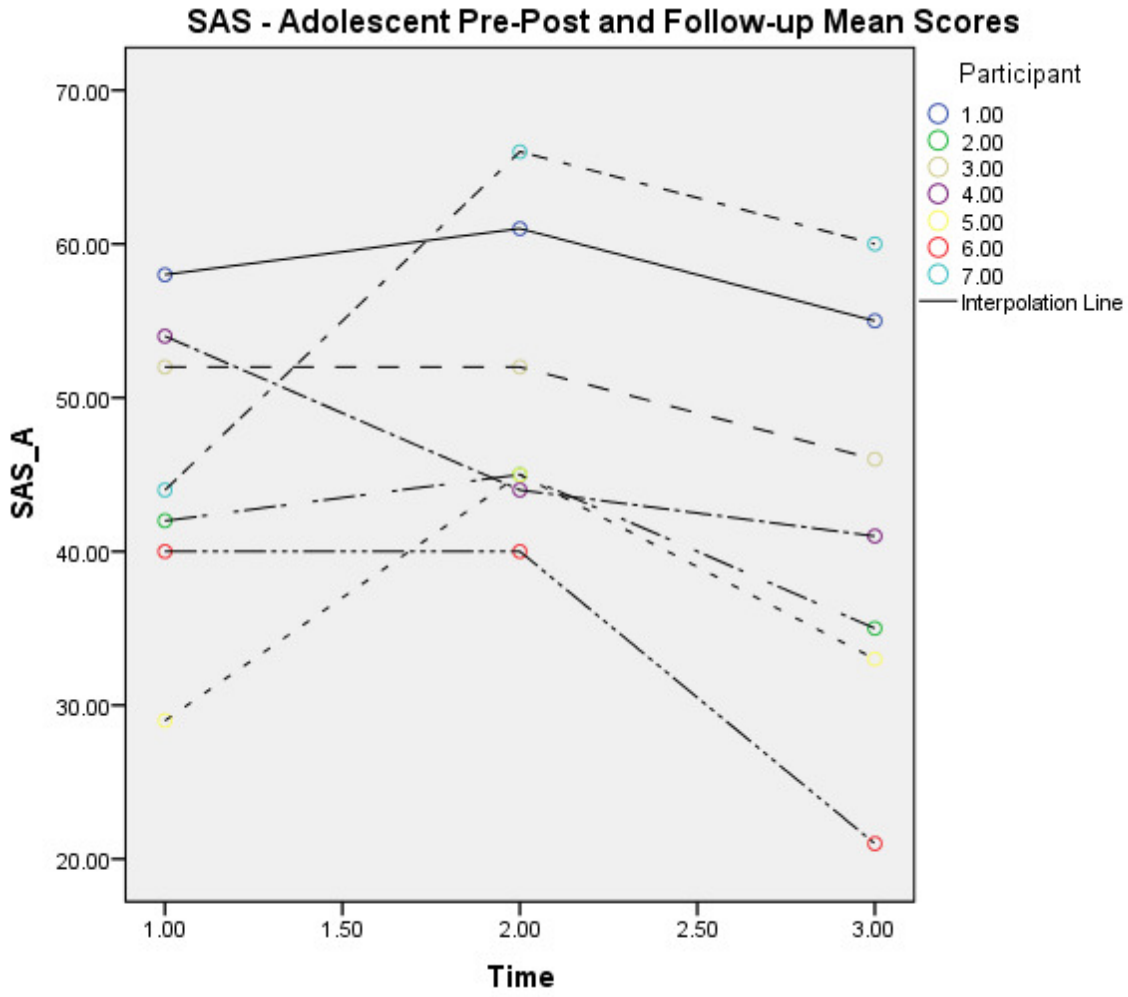

Figure 5. Individual scores for teen reports of social anxiety at pre- and post-treatment, and follow-up. Favorable results should indicate a decrease in social anxiety across the 3 time periods as per teen report.

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Appendices

Appendix A

PEERS Overview of Treatment Sessions (adapted from Laugeson & Frankel, 2010)

Session	Description of Didactic Lesson
1	Introduction and trading information: Trading information during conversations with PEERS in order to find common interests
2	Two – way conversations: Having two-way conversations with PEERS. Parents identify teen activities leading to potential friendships
3	Electronic communication: Appropriate use of voicemail, email, text messaging, instant messaging, and the Internet in developing pre-existing friendships. Parents taught the social structure of school peer groups
4	Choosing appropriate friends: Pursuing teen extra-curricular activities leading to friendships. Teens taught the social structure of school peer groups and identify groups they might fit in with
5	Appropriate use of humour: Teens learn about the rules for using appropriate humour when trying to make and keep friends. Parents are taught to help their teens pay attention to humour feedback
6	Peer entry strategies: Steps involved in joining conversations with PEERS
7	Peer exit strategies: How to assess receptiveness during peer entry and how to gracefully exit conversations when not accepted
8	Get-togethers: Planning and having successful get-togethers with friends. Appropriate parent monitoring and intervention during teen get-togethers
9	Good sportsmanship: The rules of good sportsmanship during games and sports
10	Handling teasing & embarrassing feedback: Appropriate responses to teasing. Differentiating between teasing and negative feedback and using appropriate responses to the latter
11	Handling bulling and bad reputations: Strategies for handling bullying and changing a bad reputation
12	Handling disagreements: Resolving disagreements with PEERS
13	Rumours & gossip: How to appropriately manage rumors and gossip

14 Graduation: Graduation party and ceremony. Maintaining gains in teen friendships after termination

Appendix B

CLASS (adapted from the CLASS Manual (Pianta et al. 2006)

Emotional Support

Positive Climate:

Positive Climate reflects the overall emotional tone of the classroom and the connection between teachers and students. The warmth of the teacher's interactions with students and the teacher's display of enjoyment and respect of students during interaction as well as social conversations are included in this rating. Interactions among PEERS should be considered in this rating.

Teacher Sensitivity:

Teacher Sensitivity encompasses the teacher's responsivity to students' needs and awareness of students' level of academic and emotional functioning. The extent to which the teacher is available as a secure base (allowing students to actively explore and learn and being there to provide comfort, reassurance, and encouragement) should be included in this rating.

Regard for Student Perspectives:

Regard for Student Perspectives captures the degree to which the teacher's interactions with students and classroom activities place an emphasis on students' interests, motivations, and points of view. The teacher's flexibility within activities and ability to demonstrate respect for students' autonomy to participate in and initiate activities should be considered under this rating.

Classroom Management

Behavior Management

Behavior management encompasses the teacher's ability to use effective methods to prevent and redirect misbehavior. Included in this rating is the extent to which clear expectations for students' behavior are evident. The amount of instructional time taken up by behavior management issues should be considered in this rating.

Productivity

Productivity considers how well the teacher manages instructional time and routines so that students have the opportunity to learn. Measures the degree to which time is effectively managed and down time is minimized for students; it is not about the quality of instruction or student engagement.

Instructional Learning Formats

Instructional Learning Formats focuses on what the teacher does either during the lesson or in providing activities, centers, and materials to maximize students' engagement and ability to learn. The manner in which the teacher facilitates activities so that students have opportunities to experience, perceive, explore, and utilize materials should be considered. Considering students' engagement is important for this rating.

Instructional Support

Concept Development

Concept development measures the teachers' use of instructional discussions and activities to promote students' higher order thinking skills and cognition in contrast to a focus on rote instruction.

Quality of Feedback

Quality of Feedback assesses the degree to which the teacher's provision of feedback is focused on expanding learning and understanding (formative evaluation), not correctness or the end product (summative evaluation).

Language Modeling

Language Modeling captures the quality and amount of teachers' use of language-stimulation and language-facilitation techniques during individual, small-group, and large-group interactions with students. Components of high-quality language modeling include self and parallel talk, open-ended questions, repetition, expansion/extension, and use of advanced language.

Student Outcome

Student Engagement

This dimension is intended to capture the degree to which all students in the class are focused and participating in the learning activity presented or facilitated by the teacher. The difference between passive engagement and active engagement is of note in this rating.

Peer-to-Peer Interactions (additional construct not in CLASS manual)

Opportunities & Quality of Peer Interaction

Considers how much time students are permitted to engage with each other. Also considers the quality of in-class discussions among PEERS. Evaluates how students directly respond to each other, their language use, number of conversational turns, and affect. Includes one-to-one engagement, small group interactions or class-wide discussions.

CLASS Scoring (adapted from the CLASS Manual (Pianta et al. 2006)

Low (1 and 2)

1 – The low range description fits the classroom/teacher very well. All, or most all, relevant indicators in the low range are present.

2 – The low range description mostly fits the classroom/teacher but there are one or two indicators that are in the mid-range.

Mid (3, 4, and 5)

3 – The mid-range description mostly fits the classroom/teacher but there are one or two indicators in the low range.

4 – The mid-range description fits the classroom/teacher very well. All, or almost all, relevant indicators in the mid-range are present.

5 – The mid-range description mostly fits the classroom/teacher but there are one or two indicators in the high range.

High (6 and 7)

6 – The high range description mostly fits the classroom/teacher but there are one or two indicators in the mid-range.

7 – The high range description fits the classroom/teacher very well. All, or almost all, relevant indicators in the high range are present.